IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of the claims in the application:

1. (Currently amended) A receiver correlator structure comprising:

an antenna receiving an ultra wide bandwidth signal comprising a sequence of wavelets of particular shapes and positions;

a mixer, coupled to the antenna, receiving from the antenna the ultra wide bandwidth signal and mixing the ultra wide bandwidth signal with a local ultra wide bandwidth signal comprising a sequence of wavelets of particular shapes and positions correlated to the sequence of wavelets of particular shapes and positions of the received ultra wide bandwidth signal;

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a bandpass filter, coupled to the mixer output, receiving the mixed ultra wide bandwidth signal, removing the DC components therefrom, and outputting a resultant signal, wherein an initial peak of the resultant signal is proportional to energy included in the mixed ultra wide bandwidth signal and post signal decay of the resultant signal to zero occurs in T_s time; and

a convertor, coupled to the bandpass filter, converting the resultant signal at the initial peak to a digital output signal,

wherein T_S is a center-to-center clock period for the wavelets in the local ultra wide bandwidth signal.

2. (Original) The receiver correlator structure as in claim 1, wherein the convertor comprises an analog-to-digital convertor.

3. (Original) The receiver correlator structure in claim 1, wherein the convertor comprises a comparator.

4. (Original) The receiver correlator structure as in claim 1, wherein the convertor comprises a sample and hold circuit, and integrator, and an analog-to-digital convertor coupled in series.

5. (Original) The receiver correlator structure in claim 1, wherein said local ultra wide bandwidth signal comprises a constant logic level equivalent wavelet shape.

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6. (Original) The receiver correlator structure as in claim 1, further comprising a digital signal processor coupled to the convertor and integrating the digital output signal over an N-length sequence of said wavelets.

7. (Original) The receiver correlator structure as in claim 1, wherein the resultant output signal voltage polarity corresponds to a logical “1” or a logical “0”, based upon shapes of the received ultra wide bandwidth signal and the local ultra wide bandwidth signal.

8. (Original) The receiver correlator structure as in claim 1, wherein the receiver correlator structure receives, decodes, and outputs information encoded in a series of the received ultra wide bandwidth signal wavelets.

9. (Original) The receiver correlator structure as in claim 8, wherein each of the wavelets included in the series has the same period as each prior wavelet included in the series.

10. (Currently amended) A method of an ultra wide bandwidth communication system, comprising:

receiving an ultra wide bandwidth signal comprising a sequence of wavelets of particular shapes and positions;

mixing the ultra wide bandwidth signal with a local ultra wide bandwidth signal comprising a sequence of wavelets of particular shapes and positions correlated to the sequence of wavelets of particular shapes and positions of the received ultra wide bandwidth signal;

removing the DC components therefrom, and outputting a resultant signal, wherein an initial peak of the resultant signal is proportional to energy included in the mixed ultra wide bandwidth signal and post signal decay of the resultant signal to zero occurs T_s time; and

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converting the resultant signal at the initial peak to a digital output signal,

wherein T_s is a center-to-center clock period for the wavelets in the local ultra wide bandwidth signal.

11. (Original) The method as in claim 10, further comprising:

integrating the resultant signal.

12. (Original) The method as in claim 10, wherein the removing comprises removing from the mixed signal a bias signal introduced by the mixing.

13. (Original) The method as in claim 10, wherein the resultant output signal voltage polarity corresponds to a logical "1" or a logical "0", based upon shapes of the received ultra wide bandwidth signal and the local ultra wide bandwidth signal.

14. (Original) The method as in claim 10, further comprising:

receiving, decoding, and outputting information encoded in a series of the received ultra wide bandwidth wavelets.

15. (Original) The method as in claim 12, wherein each of the wavelets included in the series has the same period as each wavelet included in the series.

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16. (Original) The method in claim 10, wherein the shape of the mixed signal is recognized dynamically and the DC components are removed therefrom.

17. (Currently amended) An apparatus comprising:

a receiver correlator receiving an ultra wide bandwidth signal comprising a sequence of wavelets of particular shapes and positions and a local ultra wide bandwidth signal comprising a sequence of wavelets of particular shapes and positions correlated to the sequence of wavelets of particular shapes and positions of the received ultra wide bandwidth signal, mixing the received ultra wide bandwidth signal and the local ultra wide bandwidth signal, removing DC components from the mixed signal, outputting a resultant signal wherein an initial peak of the resultant signal is proportional to energy included in the mixed ultra wide bandwidth signal and post signal decay

of the resultant signal to zero occurs in T_s time, converting the resultant signal to a digital signal, and outputting the digital signal,

wherein T_s is a center-to-center clock period for the wavelets in the local ultra wide bandwidth signal.

18. (Original) The apparatus as in claim 17, wherein the receiver correlator comprises:

an antenna receiving the received ultra wide bandwidth signal;

a mixer coupled to the antenna, receiving the received ultra wide bandwidth signal and the local ultra wide bandwidth signal, and mixing the received ultra wide bandwidth signal and the local ultra wide bandwidth signal;

a bandpass filter, coupled to the mixer, removing DC components from the mixed signal; and

a converter coupled to the bandpass filter and converting the resultant signal to a digital signal.

19. (Original) The apparatus as in claim 18, wherein the convertor comprises an analog-to-digital convertor.

20. (Original) The apparatus as in claim 18, wherein the convertor comprises a comparator.

21. (Original) The apparatus as in claim 18, wherein the convertor comprises a sample-and-hold circuit coupled in series to an integrator and to an analog-to-digital convertor.

22. (Original) The apparatus as in claim 17, wherein the receiver correlator receives information encoded in the received ultra wide bandwidth signal comprising the sequence of wavelets and outputs digital data corresponding thereto.

23. (Original) The apparatus as in claim 17, wherein the receiver correlator receives information encoded in one of the wavelets of the received ultra wide bandwidth signal and outputs digital data corresponding thereto.

24. (Original) The apparatus as in claim 18, wherein the bandpass filter removes from the mixed signal bias current introduced thereto by the mixer.

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25. (Original) The apparatus as in claim 18, wherein the receiver correlator further comprises a digital signal processor coupled to the convertor and integrating the output thereof.

26. (Currently amended) An ultra wide bandwidth communication system comprising:

a transmitter transmitting an ultra wide bandwidth signal comprising a sequence of wavelets of particular shapes and positions;

a wavelet generator generating a local ultra wide bandwidth signal comprising a sequence of wavelets of particular shapes and positions corresponding to the transmitted ultra wide bandwidth signal; and

a receiver correlator structure comprising:

an antenna receiving the transmitted ultra wide bandwidth signal,

a mixer, coupled to the antenna, receiving from the antenna the received ultra wide bandwidth signal and mixing the ultra wide bandwidth signal with the local ultra wide bandwidth signal,

a bandpass filter, coupled to the mixer output, receiving the mixed ultra wide bandwidth signal, removing the DC components therefrom, and outputting a resultant signal, wherein an initial peak of the resultant signal is proportional to energy included in the mixed ultra wide bandwidth signal and post signal decay of the resultant to zero occurs in T_s time, and

a convertor, coupled to the bandpass filter, converting the resultant signal at the initial peak to a digital output signal,

wherein T_s is a center-to-center clock period for the wavelets in the local ultra wide bandwidth signal.